

A NEW FLY RELATED TO PHLEBOTOMUS FROM PANAMA¹
(DIPTERA, PSYCHODIDAE)

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The biting flies of the genus *Phlebotomus* have until quite recently occupied a somewhat isolated position within the family Psychodidae, the genus being placed in a subfamily by itself, the Phlebotominae. The relationships of this subfamily to the rest of the Psychodidae have seemed somewhat obscure, in great part due to lack of adequate study of the morphology of the other genera, and to the absence of any forms at all closely related to *Phlebotomus*. Hertig (1948) has just described a new genus, *Warileya*, which differs enough from *Phlebotomus* to indicate possible relationships with other Psychodidae. The present form departs in certain respects even more widely from *Phlebotomus* and appears to be the most primitive member of the subfamily so far discovered.

Hertigia hertigi, new genus and species

Male. A pale brownish slender fly similar to *Phlebotomus* in general appearance. Head (fig. 4) wider than high, the eyes relatively larger than in *Phlebotomus*, round. Proboscis (fig. 3) essentially as in *Phlebotomus*, though they have not been dissected. Palpi as in certain *Phlebotomus*, five segmented, the first two segments partially fused, the fifth shorter than the second or third. Newstead's scales are present on the inner aspect of the third segment. Cibarium (fig. 3) and pharynx as in *Phlebotomus*, the former with a strong chitinous arch but no teeth, the latter well sclerotized, but without apparent spines. Antennae exceedingly long, with fourteen very long and slender flagellar segments. Ascoids simple, slender, less than 1/3 the length of their respective segments.

Wing (fig. 5) long and slender as in *Phlebotomus* differing chiefly in that R_{2+3} leaves R_5 proximally to the fork of R_4 and R_5 rather than distally to it as in *Phlebotomus* and *Warileya*, so that R_5 is dichotomously branched, as in *Bruchomyia*, *Nemopalpus* and some other genera. Cu is slightly better developed than in most *Phlebotomus*, and An is absent. In the type one wing is anomalous in having R_2 and R_3 briefly joined before the wing margin, shown by dotted lines in the figure. Thorax, legs and abdomen essentially as in *Phlebotomus*.

Genitalia (fig. 2) rather small. Coxite short and rounded, bearing four slender spines. Style short and more or less cylindrical, bearing three strong spines, two terminal and one subterminal. Parameres simple, nearly as long as style, bearing numerous bristles dorsally and internally. Aedeagus (fig. 1) large, well sclerotized, nearly as long as

¹Entire publication costs paid by Gorgas Memorial Institute to obtain immediate publication.

parameres. Genital filaments very short and heavy, bifid at their tips. Genital pump heavily sclerotized, the pump and filaments together being only slightly longer than the coxite and style. Lateral lobes of ninth tergite very short, shorter than the well developed cerci. Measurements in micra: Wing length, 1,962; *alpha*, 522; *beta*, 360; *gamma*, 108; *delta*, 324; third antennal segment, 264; palpi, first plus second, 88; third, 76; fourth, 44; fifth, 60; proboscis, 128; clypeus, 52; head, 192; eye, 156.

Holotype, male, Slide No. 1228, Rio Chico Hydrographic Station, Upper Chagres River, Panama, 20 March 1948. Taken in a rock crevice near a stream. P. Galindo coll.

Named in honor of my friend and colleague, Dr. Marshall Hertig, whose many years of study of *Phlebotomus* and their ways have so greatly enriched our knowledge of these important insects.

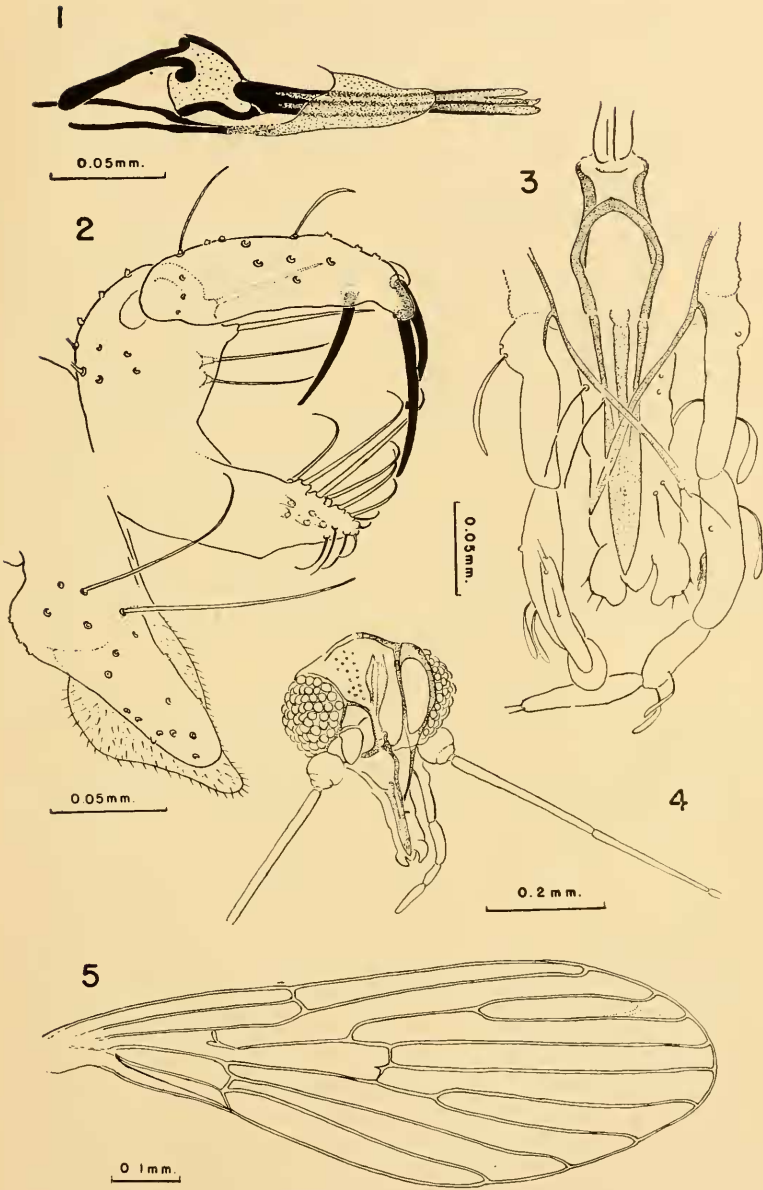
The relationships of this insect are clearly with *Phlebotomus*, to which it appears closely allied. Although the single available specimen is a male, the well developed proboscis and toothed maxillae suggest that the female may be haematophagous. Perhaps the most strikingly aberrant feature, and the one which most clearly separates it from *Phlebotomus*, is the wing venation. In *Phlebotomus* R_5 always joins R_s closer to the wing base than does R_4 , the portion of R_s between these forks being "gamma" of the phlebotometrists. In *Warileya* gamma is very short, relatively shorter than in any *Phlebotomus* known to me. In *Hertigia* R_5 joins R_s further from the wing base than R_4 , a condition also true of *Bruchomyia* and *Nemopalpus*, the latter considered by many to be the most primitive living psychodid. The wing of *Hertigia* in fact differs from that of certain species of *Nemopalpus* only in the absence of any vestige of an anal vein. From *Bruchomyia* it differs also in the much reduced cubitus.

The head of *Hertigia* resembles that of *Phlebotomus*, only the very long cylindrical antennal segments being like *Nemopalpus*. Both *Bruchomyia* and *Nemopalpus* have short proboscides, apparently not modified for blood sucking, and both have the eyes emarginate about the antennal bases, though less so in *Bruchomyia*.

The genitalia of *Hertigia* are quite *Phlebotomus*-like in general make-up, though approaching *Warileya* in the short rounded coxite and short genital filaments. It differs from

PLATE 7. HERTIGIA HERTIGI

Fig. 1, aedeagus, genital pump and filaments; fig. 2, male genitalia, external lateral view; fig. 3, proboscis, cibarium and palpi, ventral view; fig. 4, head, left side frontal view, right side cervical view; fig. 5, wing.



both genera however in the much reduced lateral lobes. In *Nemopalpus* and *Bruchomyia* the genitalia are more complex. The style bears sclerotized structures of complicated form which do not appear to be articulated in the manner of the spines of *Hertigia*. The parameres are blade-like or foliaceous sclerotized structures in *Nemopalpus* but are apparently absent in *Bruchomyia*, while the aedeagus, genital filaments and pump differ greatly in structure. Both genera lack lateral lobes on the ninth tergite.

Since the main characters separating the Phlebotominae and the Bruchomyiinae are said to be (Barreto and D'Andretta, 1946) the presence of a pectinately branched radius and biting mouthparts in the former and dichotomously branched radius and non-biting mouthparts in the latter, it becomes difficult to place *Hertigia*. In view, however, of its probably biting mouthparts, round eyes and *Phlebotomus*-like genitalia, it seems best to retain it in the Phlebotominae. Whether future discoveries will completely break down the distinctions between the two subfamilies remains to be seen. In any event it seems clear that the Phlebotominae are very closely related to the Bruchomyiinae, and it seems not unlikely that both were derived from a common ancestor rather than one from the other, for it is difficult to see how the relatively simple genitalia of *Phlebotomus* could have developed from the quite complex genitalia of *Nemopalpus*.

REFERENCES

- Hertig, M., 1948. A new genus of bloodsucking Psychodids from Peru. *Ann. Ent. Soc. Amer.*, 41:8-16, 13 figs.
- Barretto, M. P. and M. A. Vulcano D'Andretta, 1946. Observacoes sobre a subfamilia *Bruchomyiinae* Alexander, 1920 com a descricao de quatro novas especies. Livro de homenagem a R. F. d'Almeida, No. 6, pp. 55-76.

CHARLES WALTER COLLINS

1882-1948

Charles Walter Collins died October 18, 1948 at his home in Morristown, New Jersey, following an extended illness.

Mr. Collins was born in Harrington, Delaware on July 6, 1882. He attended the local schools, subsequently receiving a B.S.A. degree at Delaware State College in 1905. In 1913 he was granted a M.S. degree from the same institution.

In 1907 Mr. Collins became an assistant at the Gypsy Moth Laboratory, which at that time was directed by the Commonwealth of Massachusetts and was located in Saugus. Two years later he received an appointment with the United States Bureau of Entomology, and from 1909 until 1935 he was sta-